



Air Quality Permitting Statement of Basis

November 3, 2005

**Permit to Construct No. P-050314 and
T1 Operating Permit No. T1-050315**

**Ash Grove Cement Company
Inkom, ID**

Facility ID No. 005-00004

Prepared by:

**Carole Zundel, Permit Writer
AIR QUALITY DIVISION**

**FINAL PTC AND
PROPOSED FOR EPA REVIEW T1-OPERATING PERMIT**

Table of Contents

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURES	3
1. PURPOSE	5
2. FACILITY DESCRIPTION	5
3. FACILITY / AREA CLASSIFICATION.....	6
4. APPLICATION SCOPE	6
5. PERMIT ANALYSIS.....	6
6. PERMIT FEES	11
7. PERMIT REVIEW	12
8. RECOMMENDATION.....	12
APPENDIX A - AIRS INFORMATION	13
APPENDIX B - EMISSIONS INVENTORY	15

Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscfm	dry standard cubic feet per minute
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic feet
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
lb/ton	pound per ton
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
SIP	State Implementation Plan
SM	Synthetic Minor
SO ₂	sulfur dioxide
T/yr	tons per year
VOC	volatile organic compound

Public Comment / Affected States / EPA Review Summary

A 30-day public comment period for the Ash Grove Cement Company proposed PTC and draft Tier I operating permit was held in accordance with IDAPA 58.01.01.209.05(b) and IDAPA 58.01.01.364, *Rules for the Control of Air Pollution in Idaho*.

IDAPA 58.01.01.008.01 defines *affected states* as: “All states: whose air quality may be affected by the emissions of the Tier I source and that are contiguous to Idaho; or that are within 50 miles of the Tier I source.”

A review of the site location information included in the permit applications indicate that the facility is located within 50 miles of tribal land. Therefore, the Fort Hall Indian Reservation was provided an opportunity to comment on the proposed PTC and the draft Tier I operating permit. The state of Utah is located 53 miles from the facility and is not subject to notification.

Summary of Comments

No comments were received from any affected state or any other person or entity.

A hearing was not requested.

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct and IDAPA 58.01.01.300 for issuing Tier I operating permits.

2. FACILITY DESCRIPTION

Ash Grove Cement Company manufactures portland cement. The Inkom facility is located adjacent to the quarry from which raw limestone, MgO limestone, clay, and shale are mined. The raw materials are removed from the bedrock by blasting with explosives, then bulldozing the rock to the quarry floor, and hauling the rock to the jaw crusher. The silica and iron ore are hauled to the plant and stockpiled. These materials are also crushed as needed.

The mined material is usually too large to be used in cement manufacturing at this point, so further processing is required. Material enters a crusher and is screened until the appropriate size is obtained. When the rock reaches the desirable size it is transported by a conveyor belt to storage silos for later use in the cement making process. The rock from the silos is measured, and then transported to a ball mill by conveyor belts. The material is ground, forming homogeneous slurry of water and rock.

The slurry is fed to the back of the kiln, which declines at a 4% slope. In order to form clinker the slurry must be heated to incipient fusion where calcination takes place. To perform the energy intensive task of making clinker, gases flowing counter current to the material flow are heated to an excess of 1650°C (3,000°F) by fossil and used fuels. Currently, the primary fuels used by the Inkom plant kiln are coal and whole tires.

The chemically reacting raw materials reach a temperature of approximately 1538°C (2800°F) before exiting the kiln and entering the clinker cooler.

The clinker exits the kilns at temperatures of 2000°F. It enters clinker coolers beneath the kiln where the heat is transferred from the clinker to the secondary air that reenters the kiln. All the forced air entering the cooler is utilized in the kiln as primary and secondary air for fuel combustion. The clinker leaves the cooler at around 260°C (500°F). Drag chains, elevators, and conveyor belts are used to transport the warm clinker from the clinker cooler to clinker storage.

The clinker is transported from the storage areas to the three finish ball mills where it is ground with gypsum to make cement. Separators are used to return oversized particles back to the mills for additional grinding. The plant can grind 450,000 tons of clinker per year. The cement is then pneumatically conveyed to the cement storage silos. Upon withdrawal from the silos, the cement is shipped bulk to customers.

A byproduct from the manufacturing process is a potassium sulfate solution. The product is leached from dust collected from the electrostatic precipitators (ESPs), making a potash solution. The potash solution is pumped to two lined evaporating ponds located near the quarry. Fertilizer companies transfer the solution to their trucks for distribution to potato farming customers.

3. FACILITY / AREA CLASSIFICATION

The facility is a designated facility as defined in IDAPA 58.01.01.006.27 (Portland Cement Plant). The AIRS Facility Subsystem classification is "A" because potential emissions of PM₁₀, SO₂, NO_x, and CO are greater than 100 tons per year. The facility is a major facility for PSD permitting purposes because the facility's PTE is greater than 100 T/yr. This facility is a portland cement manufacturer, SIC code 3241. Ash Grove Cement Company is located in AQCR 61 in Bannock County. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants (PM₁₀, SO_x, O₃, NO₂, CO, and Pb). There are no class I areas within 10 km of the facility.

4. APPLICATION SCOPE

The facility has applied for a PTC to add clinker truck and railcar unloading and conveying equipment as follows:

- New vibratory feeder
- New covered conveyor belt
- Replace existing 50 ton/hr No. 2 clinker elevator with new 100 ton/hr elevator

4.1 Application Chronology

5/16/05	PTC and Tier I operating permit application received
5/18/05	Application fee for PTC received for \$1,000
6/8/05	Additional information received
6/15/05	PTC application declared complete
7/14/05	Tier I operating permit application declared complete
6/22/05	Request for a draft permit received
8/16/05	Facility draft PTC and Tier I operating permit issued
8/23/05	Comments received from facility
8/25/05	\$1,000 processing fee received
9/16/05	Public comment permits issued
9/27–10/26/05	Public comment period held for PTC and Tier I operating permit

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Vibratory Feeder

Manufacturer: Eriez Magnetics Model 75B

Capacity: 300 ton per hour or less

Operational Controls: 0-100% of capacity using potentiometer

Power Supply: 460V, single phase, 15 amps

Emissions Controls: Full enclosure around feeder tray

Covered clinker conveyor belt

Manufacturer: Components from numerous manufacturers

Belt width: 24 inches

Belt length: Approximately 30 feet

Emissions Controls: Full enclosure at transfer points, full covers over length of conveyor

No. 2 clinker elevator

100 tons per hour

No. 5 clinker drag

100 tons per hour

No. 2 baghouse

(specs taken from Tier II Operating Permit and Permit to Construct No. 005-00004, dated 11/27/02)

Manufacturer: Argo Blower

Model: 5984-C

Air-to-Cloth Ratio: 4.94-1

5.2 Emissions Inventory

The estimated emissions are summarized in Table 5.1. From the application, the rate of material transfer is 100 t/hr, 500 tons per day, and 55,000 t/yr. The estimated emissions are calculated as follows:

The maximum hourly emission rate for PM₁₀ for truck or rail unloading to the hopper, based on the AP-42 Section 11.19.2 emission factor of 0.0001 pounds per ton (lb/ton) for truck unloading – conveyor, crushed stone, is 0.01 lb/hr of PM₁₀. Because AP-42 does not have an emission factor for this operation for PM, it was assumed in the application that PM is the same as PM₁₀. However, upon examination of the remainder of the AP-42 table 11.19.2-2, it appears that PM is approximately three times higher than PM₁₀. Therefore, the estimated emissions for PM were increased by three times the amount estimated in the application.

The emissions estimates provided for the transfer from the hopper to the conveyor are based on an emission factor from AP-42 Table 11.19.2-2 for Conveyor Transfer Points (it is presumed that the factor is for uncontrolled emissions). The emission factor is 0.003 lb/ton for PM and 0.0011 lb/ton for PM₁₀. The application used the PM emission factor for both PM and PM₁₀, which overestimates the amount of PM₁₀ emitted. In addition, because the transfer point is located below grade and is enclosed, the application shows a control of 90%.

The transfer point at the belt conveyor to the elevator was estimated in the application based on the uncontrolled conveyor transfer point emission factor. The application states that the conveyor transfer point is located at a point that is partially enclosed. The application asserts that there will be some control from Baghouse No. 2, which controls emissions from the clinker silo elevator. The application estimates that the transfer point partial enclosure and the baghouse will result in 90% control of emissions.

Baghouse No. 2 controls emissions from clinker from the unloading operation and clinker from the kilns. The clinker from the kilns is an existing operation and is not addressed in this permit action. The baghouse emissions are limited in the facility's Tier II operating permit.

Clinker in the silos are conveyed to the finish mills. There are currently process rate limits for the finish mills in the facility's PTC/Tier II Operating Permit No. 005-00004, issued November 27, 2002, and incorporated into Tier I Operating Permit No. T1-9508-132-1. This PTC did not request an increase in the production rate or emission limits associated with the finish mills.

The No. 2 clinker elevator that will be used to transport the off-site clinker to the silos is also used to transport clinker from the kilns. Because this 50 t/hr elevator will be replaced with a 100 t/hr elevator, DEQ asked if this would cause the existing transfer of clinker from the kilns through the elevator to be increased. The throughput of the elevator was not limited in the above-referenced PTC/Tier II operating permit or in the Tier I operating permit. The facility stated, in a letter to DEQ dated June 6, 2005, that "The transfer rate and emissions will remain unchanged for the conveyance system from the kilns to the clinker silo storage. This conveyance system is limited to 50 t/hr due to the #4 clinker drag chain. This drag chain will not be modified and therefore, increasing the capacity of the clinker elevator will not "debottleneck" the conveyance system from the kiln to the clinker silos."

The emissions from the elevator are controlled by the No. 2 baghouse. The emissions from that baghouse are estimated using a grains per dry standard cubic feet (gr/dscf) factor developed from modeling. The current PM₁₀ emissions limit in the facility's Tier II Operating Permit No. 005-00004, issued November 27, 2002, is 1.22 lb/hr and 0.27 T/yr. A source test conducted on August 28, 2003 showed a PM emission rate of 0.044 lb/hr and 0.002 gr/dscf (from DEQ evaluation of test data). This test was approved by DEQ on March 11, 2004. The facility has requested that the annual emissions be estimated based on 0.014 gr/dscf for this baghouse, which is higher than the tested rate. The facility's calculation to estimate annual emissions was based the factor of 0.014 gr/dscf, an increase of hours of operation of 550 hours per year, and an exit air flow rate of 5,124 dry standard cubic feet per minute (dscfm). The flow rate measured during the performance test was 3,041 dscfm. The facility's calculation will overestimate emissions by using a higher flow rate and a higher grain loading value, which is conservative. The calculation is shown in Appendix B.

Table 5.1 ESTIMATED EMISSIONS

Source	PM		PM ₁₀	
	lb/hr	T/yr	lb/hr	T/yr
Truck/Rail to hopper	0.03	0.009	0.01	0.003
Hopper to conveyor	0.03	0.008	0.03	0.008
Conveyor to elevator	0.03	0.008	0.03	0.008
Elevator to storage, controlled by Baghouse No. 2	No increase	0.17	No increase	0.14
Total	0.09	0.195	0.07	0.159

5.3 Modeling

No modeling is required because, in accordance with DEQ's Air Quality Modeling Guideline, dated December 31, 2002, modeling is not required for sources that have an increase of PM₁₀ less than 0.2 lb/hr or 1.0 T/yr.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201..... Permit to Construct Required

A permit to construct is required for this installation because, without limits to require emission controls, the installation would not qualify for an exemption in accordance with IDAPA 58.01.01 220-223. PM₁₀ emissions would exceed 10% of the significant contribution level specified in IDAPA 58.01.01.006.90. In addition, the facility requested a voluntary permit to construct.

IDAPA 58.01.01.205..... Permit Requirements for New Major Facilities or Major Modifications in Attainment of Unclassifiable Areas, and

40 CFR 52.21 Prevention of Significant Deterioration (PSD)

The requirements of this section apply to any project at an existing major stationary source in an area designated as attainment or unclassifiable. Ash Grove Cement Company is an existing major stationary source. A major modification means any physical change in or change in the method of operation of a major stationary source that would result in a significant emissions increase of a regulated NSR pollutant and a significant net emissions increase of that pollutant. To determine whether there is a significant emissions increase, the project must be defined. In this case, the project is defined as the unloading of trucks and railcars into a hopper, the covered conveyor, the new elevator, and the bins, which includes Baghouse No. 2 as control equipment. Although the elevator is in line with the kiln and kiln conveyors, these are limited by permit and, according to Ash Grove Cement Company's permit application, will not increase production as a result of the installation of the new elevator. Also, although the short-term loading rate to the storage bins will be increased, the annual cement production will remain unchanged. No request was made to modify any of the hourly baghouse and throughput permit limits for cement. Therefore, this project does not debottleneck the remainder of the facility and is limited to the clinker unloading and conveying operation. The project's emissions are 0.07 lb/hr and 0.16 T/yr for PM₁₀, which is much less than the significant emissions increase level. Therefore, this change does not constitute a major modification.

40 CFR 52.21(r)(6) specifies requirements for "projects at an existing emissions unit at a major stationary source in circumstances where there is a reasonable possibility that a project that is not a part of a major modification may result in a significant emissions increase and the owner or operator elects to use the method specified in paragraphs (b)(41)(ii)(a) through (c) of this section for calculating projected actual emissions." For this clinker unloading project, because the project does not debottleneck or increase emissions from the kiln process line or the cement process line, there is not a reasonable possibility that this project would result in a significant emissions increase. Therefore, Section (r)(6) does not apply.

IDAPA 58.01.01.209.05(b) Permit to Construct Procedures for Tier I Sources

For Tier I sources that require a permit to construct, the facility is required to comply with 209.05 a, b, or c. The facility has requested that the permit to construct be processed in accordance with 209.05(b). The facility has submitted a PTC application and a Tier I operating permit modification application.

IDAPA 58.01.01.385 Off-Permit Changes and Notice

This project does not qualify for an off-permit change because this modification is subject to 40 CFR 60 Subpart F as discussed in that section of this statement of basis and is therefore a modification under Title I of the Clean Air Act. IDAPA 58.01.01.385.01 specifically states that changes constituting a modification under Title I of the Clean Air Act are not off-permit changes.

IDAPA 58.01.01.382.01 Significant Permit Modification

This project is subject to the provisions of this section per IDAPA 58.01.01.385.01(e) because the change constitutes a modification under a provision of Title I of the Clean Air Act.

40 CFR 60 Subpart F Standards of Performance for Portland Cement Plants

Applicability is defined in the subpart as follows:

"(a) The provisions of this subpart are applicable to the following affected facilities in portland cement plants: Kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, finished product storage, conveyor transfer points, bagging and bulk loading and unloading systems."

"(b) Any facility under paragraph (a) of this section that commences construction or modification after August 17, 1971, is subject to the requirements of this subpart."

This PTC is for conveyor transfer points and bulk unloading systems. The elevator and conveyor equipment is new construction. Therefore, this subpart applies to the unloading operation in this PTC.

40 CFR 60.62(c) is as follows:

"On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility other than the kiln and clinker cooler any gases which exhibit 10 percent opacity, or greater."

The facility's existing Tier II operating permit and Tier I operating permit already limit opacity emissions from Baghouse No. 2 and all other affected emissions units to 10%. Therefore, there is no need to create new permit conditions in this PTC and Tier I operating permit for these limitations.

The testing requirement to demonstrate compliance with this is from 40 CFR 60.8 (a) as follows:

" Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of such facility shall conduct performance test(s) and furnish the Administrator a written report of the results of such performance test(s). "

This requirement is incorporated as Permit Condition 2.5 in the PTC and as Permit Condition 11.14 in the Tier I operating permit as follows:

Within 60 days of achieving the maximum production rate of the clinker unloading system, but not later than 180 days after issuance of this permit, the permittee shall conduct a performance test in accordance with 40 CFR 60 Subpart F and 40 CFR 60.8.

5.5 Permit Conditions Review

This section describes the emissions limits, monitoring and recordkeeping requirements for this permit.

The baghouse (Baghouse No. 2) PM and PM₁₀ emissions are limited (lb/hr and T/yr) in the facility's existing Tier I and Tier II operating permits. The facility's existing Tier I and Tier II operating permits also limit opacity emissions from Baghouse No. 2 as well as all other affected emissions units to 10% in accordance with the applicable NSPS. Therefore, there is no need to create new permit conditions in this PTC or Tier operating permit for these limitations.

New permit PTC conditions 2.3 and 2.4 and Tier I operating Permit Conditions 11.7(a) and 11.13 limits the clinker handling throughput and requires monitoring of the clinker throughput. This limitation and monitoring requirement are in the permit because the emissions that would result from this production rate are below the DEQ modeling threshold. Throughput above this rate may result in emissions that would require modeling to demonstrate compliance with the National Ambient Air Quality Standards prior to issuing a permit to construct.

New Permit Condition 2.3 of the PTC and new Permit Condition 11.7(a) of the Tier I operating permit is as follows:

"Clinker Throughput Limits

The clinker from truck and railcar unloading operations shall not exceed 55,000 tons per any consecutive 12-month period."

Permit Condition 2.4 of the PTC and Permit Condition 11.13 of the Tier I operating permit is as follows:

“Throughput Monitoring

The permittee shall monitor and record the amount of clinker unloaded for each month and for the most recent 12-month period. Records kept on site for the most recent two-year period and shall be made available to DEQ representatives upon request.”

In addition to the new permit conditions, the following changes were made to the Tier I operating permit:

- Change the facility contact and responsible official to Ron Smith, plant manager
- Incorporate PTC No. P-050314
- State that this Tier I modification supersedes Tier I Operating Permit No. 005-00004, issued December 17, 2002
- Add clinker unloading description to Table 1.5 and Table 11.1
- Add a description of the clinker unloading operation in Section 11
- Update Permit Conditions 21.1 and 24 to specify the actual reporting period dates. The dates have been set to January 1 – December 31 for the annual report and January 1 – June 30 and July 1 – December 31 for the semi-annual report as requested by the facility and approved by the Pocatello Regional Office.

The rest of the Tier I operating permit remains unchanged.

6. PERMIT FEES

A PTC application fee of \$1,000 is due in accordance with IDAPA 58.01.01 224. This fee was paid on May 18, 2005. A PTC processing fee of \$1,000 was assessed in accordance with IDAPA 58.01.01.225 as shown in Table 5.1. The processing fee was received by DEQ on August 25, 2005. Ash Grove Cement Company is a major facility and Tier I fees are applicable. Ash Grove Cement Company is current with the Tier I fees.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM ₁₀	0.16	0	0.16
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.16	0	0.16
Fee Due	\$ 1,000.00		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permits

A facility draft PTC and a Tier I operating permit were mailed to the DEQ Pocatello Regional Office on August 16, 2005 for review. There were no comments from the Region.

7.2 Facility Review of Draft Permits

A facility draft PTC and a Tier I operating permit were mailed to Ash Grove Cement Company on August 16, 2005 for review. Comments were received on August 23, 2005. Most of the comments were incorporated. A follow-up phone call to the facility resolved the remaining comments.

7.3 Public Comment

In accordance with IDAPA 58.01.01.209.05(b)iii, a public comment period was provided for the PTC and for the Tier I operating permit from September 27, 2005 through October 26, 2005. No comments were received.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Ash Grove Cement Company be issued final PTC No. P-050314 and that the EPA be issued the proposed Tier I Operating Permit No. T1-050315 in accordance with IDAPA 58.01.01.209.05(b)v for the clinker unloading operation. The project does not involve PSD requirements.

CZ/sd Permit No. P-050314 and Permit No. T1-050315

G:\Air Quality\Stationary Source\SS Ltd\PTC\AGC\P-050314\Final\Ash Grove P-050314 Final SB.doc

Appendix A

AIRS Information

P-050314 and T1-050315

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

Facility Name: Ash Grove Cement Company
Facility Location: Inkom, ID
AIRS Number: 005-00004

AIR PROGRAM								AREA CLASSIFICATION
POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	A-Attainment U-Unclassified N- Nonattainment
SO ₂	A	A					A	U
NO _x	A	A					A	U
CO	A	A					A	U
PM ₁₀	A	A					A	U
PT (Particulate)	A	A	A				A	
VOC	B	B						
THAP (Total HAPs)								
			APPLICABLE SUBPART					
			F		LLL			

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

P-050314 and T1-050315

[REDACTED] The short-term throughput will be limited by the 100 ton per hour elevator capacity and 500 tons per day, rather than the 500 ton per hour peak rate identified in Appendix A of the Tier I Technical Basis Statement.

Emissions will be controlled by enclosing transfer points (i.e., from the hopper to the feeder and from the feeder to the conveyor) and by covering the conveyor. Furthermore, the first three transfer points are located approximately 7 feet below ground level and are surrounded by existing structures that provide additional protection from the wind. Emissions resulting from the transfer point between the conveyor and the elevator will be strictly controlled by means of an enclosed transfer point.

2.4 PROPOSED OPERATIONS - CRITERIA POLLUTANT EMISSIONS (PM10)

The clinker unloading project will generate small quantities of fugitive (clinker) dust. Clinker is not identified as a toxic air pollutant in IDAPA 58.01.01.585 or 586. Therefore, the only pollutants relevant to this PTC application are PM and PM10.

EPA's emission factor document, AP-42, has the following emission factors for bone-dry (moisture content less than 1.5%) material truck unloading and conveyer transfer points.

- Section 11.19.02, Crushed Stone Processing and Pulverized Mineral processing, August 2004
 - Truck unloading, uncontrolled – bone dry crushed stone = 0.00010 lb PM10 / ton
 - Conveyor transfer point, uncontrolled – bone dry crushed stone = 0.0030 lb PM / ton

Emission factors contained within section 11.19.02 are the most appropriate emission factors to use because these emission factors are the most recent emission factors developed and published. Also, because clinker has a typical moisture content of less than 1.5% and is considered bone-dry, it is appropriate to use emission factors that are developed from source tests of the unloading and transfer processes of bone-dry materials. Emission factors for total particulate (PM) are conservatively being used in calculating emissions of PM10.

Based on AP42 emission factors, the proposed clinker unloading facility operation would have emissions far less than the Tier I estimated emissions of 6 lbs PM10 per hour. Furthermore, the receiving rate in the new operations would be no more than 100 tons per hour and 500 tons per day, compared to the present clinker unloading method, whose emissions are based on a 250 ton/hr average over the peak 24-hour period.

For example, calculated uncontrolled emissions from the railcar unloading to the hopper using the AP-42 emission factor above would be 0.01 lb/hr (100 tons/hour * 0.0001 lb PM10/ton). This is less than 1 percent of the emission rate identified in Appendix A of the Tier I Technical Memorandum for past clinker unloading operations. Following is a description of each of the three clinker transfer points of emissions along with the increased utilization of the #2 baghouse controlling the clinker elevator. Total emissions are summarized in Table 1.

2.4.1 Railcar dump to hopper

Emission factors developed and published within Section 11.19.2 (August 2004) of EPA's AP-42 reference documents are utilized to estimate emissions from the clinker unloading operation. Below are the maximum hourly, 24-hour average, and annual average PM10 emission rates.

$$\begin{aligned} \text{Peak hourly:} & \quad (0.0001 \text{ lb/t})(100 \text{ t/h}) = 0.01 \text{ lb/hr} \\ \text{24-hour average:} & \quad (0.0001 \text{ lb/t})(500 \text{ t/day}) = 0.05 \text{ lb/day} = 2.08 \text{ E-03 lb/hr} \\ \text{Annual average:} & \quad (0.0001 \text{ lb/t})(55,000 \text{ t/y}) = 5.5 \text{ lb/yr} = 6.28 \text{ E-04 lb/hr} \end{aligned}$$

2.4.2 Hopper to belt conveyor

Emission factors developed and published within Section 11.19.2 (August 2004) of EPA's AP-42 reference documents are utilized to estimate emissions from the conveyor transfer point from the hopper to the belt conveyor. This conveyor transfer point is located below-grade and will therefore reduce the uncontrolled emission rates due to the fact that the wind disturbance will be reduced. We estimate that the conveyor transfer point below-grade enclosure will result in 90% control for this source. Below are the maximum hourly, 24-hour average, and annual average PM10 emission rates.

$$\begin{aligned} \text{Peak hourly:} & \quad (0.0030 \text{ lb/t})(100 \text{ t/h})(1-0.9) = 0.03 \text{ lb/hr} \\ \text{24-hour average:} & \quad (0.0030 \text{ lb/t})(500 \text{ t/day})(1-0.9) = 0.15 \text{ lb/day} = 6.25 \text{ E-03 lb/hr} \\ \text{Annual average:} & \quad (0.0030 \text{ lb/t})(55,000 \text{ t/y})(1-0.9) = 16.5 \text{ lb/yr} = 1.88 \text{ E-03 lb/hr} \end{aligned}$$

2.4.3 Belt conveyor to elevator

Emission factors developed and published within Section 11.19.2 (August 2004) of EPA's AP-42 reference documents are utilized to estimate emissions from the conveyor transfer point from the belt conveyor to the elevator. This conveyor transfer point is located at a point that is partially enclosed. In addition, there will be negative pressure from baghouse No. 2 at this transfer point which will provide some level of emissions capture. We estimate that the conveyor transfer point enclosure and baghouse collection will result in 90% control for this source. Below are the maximum hourly, 24-hour average, and annual average PM10 emission rates.

$$\text{Peak hourly: } (0.0030 \text{ lb/t})(100 \text{ t/h})(1-0.9) = 0.03 \text{ lb/hr}$$

$$\text{24-hour average: } (0.0030 \text{ lb/t})(500 \text{ t/day})(1-0.9) = 0.15 \text{ lb/day} = 6.25 \text{ E-03 lb/hr}$$

$$\text{Annual average: } (0.0030 \text{ lb/t})(55,000 \text{ t/yr})(1-0.9) = 16.5 \text{ lb/yr} = 1.88 \text{ E-03 lb/hr}$$

2.4.4 Associated baghouse emissions

Baghouse #2 currently controls emissions from the clinker silo elevator. This baghouse currently operates approximately 450 hours per year, corresponding to periods of clinker transfer from the kilns to the clinker silos. With the proposed unloading operations, baghouse #2 will be operated more often to control periods of time that the elevator is transferring clinker from the unloading operations into the clinker storage silos. This increased operating time will be 550 hours per year (55,000 tons clinker per year / 100 tons per hour). Short-term emissions from the baghouse are not affected due to this modification. Emissions associated with the 550 hours per year of operation are based on the grain loading of the baghouse and are calculated below.

$$\text{Annual PM} = \frac{0.014 \frac{\text{gr}}{\text{dscf}} * 5,124 \frac{\text{dscf}}{\text{min}} * 550 \frac{\text{hr}}{\text{yr}} * \frac{60 \text{ min}}{\text{hr}}}{7,000 \frac{\text{gr}}{\text{lb}} * 2,000 \frac{\text{lb}}{\text{ton}}} = 0.17 \text{ tpy}$$

$$\text{Annual PM}_{10} = \frac{0.014 \frac{\text{gr}}{\text{dscf}} * 5,124 \frac{\text{dscf}}{\text{min}} * 550 \frac{\text{hr}}{\text{yr}} * \frac{60 \text{ min}}{\text{hr}}}{7,000 \frac{\text{gr}}{\text{lb}} * 2,000 \frac{\text{lb}}{\text{ton}}} * \text{PM}_{10} \text{ Fraction}(85\%) = 0.14 \text{ tpy}$$

TABLE 1
SUMMARY OF POTENTIAL EMISSIONS

Source	Pollutant	Peak Hourly Emissions (lb/hr)	24-hour Average Max. Emissions (lb/hr)	Annual Emissions (lb/yr)	IDEQ Below Regulatory Concern Exemption (tpy)	PSD Significant Emission Rate (tpy)
Train to Hopper	PM & PM10	0.010	2.08 E-03	5.5		
Hopper to Conveyor	PM & PM10	0.030	6.25 E-03	16.5		
Conveyor to Elevator	PM & PM10	0.030	6.25 E-03	16.5		
Baghouse Increase	PM	no change	no change	338.2		
	PM10	no change	no change	287.5		
TOTAL	PM	0.070	0.0146	377 (0.19 tpy)	2.5	25
	PM10	0.070	0.0146	326 (0.16 tpy)	1.5	15

Total annual emissions of PM10 would be 0.16 tons per year and total particulate (PM) emissions would be 0.19 tons per year based on 55,000 tons clinker per year. Thus, emissions from this source are "Below Regulatory Concern", below the PSD Significant Emission Rates (SERs), and also well below potential emissions from the past clinker unloading operations of 6 lb/hr.